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VITA
(Revised August 2005)

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PERSONAL DATA: Date of Birth: December 16, 1964
Place of Birth: Jeffersonville, IN, U.S.A.
Children: Daniel Scott Ehringer (4/9/91)
Kristen Elise Ehringer (5/26/92)
Sarah Breanne Ehringer (7/18/95)

EDUCATION: Ph.D. Medical Biophysics, Indiana University, 1993.
M.S. Biology, Purdue University, 1990.
B.A. Biology, Indiana University, 1988.

PROFESSIONAL EXPERIENCE: Founder and Chief Scientific Officer, VitaTech, LLC and Novera LLC, 201 East Jefferson Street, Louisville, KY 40292, 2002-present
Associate Professor, Department of Physiology and Biophysics, University of Louisville, 2003-present
Director, Center for Cellular Energy Delivery, University of Louisville, School of Medicine, 2004-present
Assistant Professor, Department of Physiology and Biophysics, University of Louisville, 2000-2003
Associate Professor, Anatomy and Physiology, St. Catharine College, 2001-2002
Assistant Professor, Center for Applied Microcirculatory Research, University of Louisville, 1996-2000.
Adjunct Instructor Physiology, Anatomy, and Human Biology
Indiana University Southeast, 1994-1995.

**RESEARCH
INTERESTS:**

Cell, tissue, organ and organism preservation
Cell biology/biochemistry of cells and tissues
Membrane fusion mechanisms

**PROFESSIONAL
SOCIETIES:**

Biophysical Society (1989 - present)
American Physics Society (1989 - present)

**TEACHING
ACTIVITIES:**

Physiology 609, Department of Physiology, University of Louisville, Fall 2004

Physiology 611, Department of Physiology, University of Louisville, Summer 2005

Anatomy and Physiology I, Lecture and Lab, St. Catharine College, Life Sciences Division, Fall 2001

Anatomy and Physiology II, Lecture and Lab, Life Sciences Division, St. Catharine College, Fall 2001, Spring 2002

Physiology Methods, P625, 2000-present, Department of Physiology, University of Louisville School of Medicine

Methods in Cellular Fluorescence, P620, Fall 1997-2002, Center For Applied Microcirculatory Research, University of Louisville School of Medicine

Physiology of Inflammation, P680, Fall 1995, Physiology Department, University of Louisville School of Medicine.

Experimental Physiology LAB, P624, Fall 1995, 1996, 1999 Physiology Department, University of Louisville School of Medicine.

Human Biology, P130, Fall 1995, Biology Department, Indiana University Southeast.

Human Anatomy (Lecture), A215, Fall 1994-1995, Biology Department, Indiana University Southeast.

Human Anatomy (Lab), A215, Fall 1994-1995, Biology Department, Indiana University Southeast.

Cellular Basis for Vascular Control, P685, Spring 1995, Physiology Department, University of Louisville School of Medicine.

Human Physiology, (Lecture) P215, Spring 1995, Biology Department, Indiana University Southeast.

Human Physiology, (Lab) P215, Spring 1995, Biology Department, Indiana University Southeast.

**UNIVERSITY AND
PROFESSIONAL
SERVICE:**

Research!Louisville Judge, 2002-present
Promotion and Review Committee, Center for Applied Microcirculatory Research, Louisville, KY, 1996-2000
Core Equipment Committee, Center for Applied Microcirculatory Research, Louisville, KY 1998-2000

Ph.D Mentor:

Candice Thomas, Department of Physiology, University of Louisville
Eric Essick, Department of Physiology, University of Louisville
Rachel Keith, Department of Physiology, University of Louisville
Gregory Feitelson, Department of Physiology, University of Louisville

Ph.D. Thesis Committee:

Gilandra Russell, Department of Pharmacology, University of Louisville
Ceric Francois, Department of Physiology, University of Louisville
Frederico Grossi, Department of Physiology, University of Louisville
Kristi Henzel, Department of Physiology, University of Louisville
Heather Calamita, Department of Microbiology, University of Louisville
Stacey Yankey, Department of Chemistry, University of Louisville
Leonardo Clavijo, Department of Physiology, University of Louisville

Thesis Committee (Masters):

Leonardo Clavijo (M.S.), Department of Physiology, University of Louisville
Kelley Steir (M.E.E.), Department of Electrical Engineering, University of Louisville
Kamal Khiani, (M.E.E.), Department of Electrical Engineering, University of Louisville

Ad hoc reviewer: *American Journal of Physiology and Microcirculation*

**COMMUNITY
SERVICE:**

Science Fair Organizer, St. Anthony School, 2001-2003
Lector, St. Augustine Catholic Church, January 1995-2003
Lay Minister, St. Augustine Catholic Church, January 1997-2003
President, Golfview Homeowner's Association, 1997-1999
Parish Council, St. Augustine Catholic Church, June 1996-1999
Habitat for Humanity, Clark County, IN, September 1993-1994

AWARDS AND HONORS:

Research! Louisville Award, 3rd Place, Major Potential For Clinical Application, 2004

Research! Louisville Award, 1st Place Most Promising Basic Science, 2003

Research! Louisville Award, 1st Place, Major Potential For Clinical Application, 2003

Vogt Innovation and Invention Award, 2003

License and Options with University of Louisville Research Foundation, 2002

Research! Louisville Award 2nd Place, Innovation in Biotechnology, 2002

Research! Louisville Award 2nd Place, Scientific Importance, 2002

Health Science Center Research Forum - Chosen as Postdoctoral Awardee,
University of Louisville Medical School, Louisville, KY, 1995.

American Heart Association Postdoctoral Research Fellow, Kentucky Affiliate,
7/95 - 6/96.

American Heart Association Postdoctoral Research Fellow, Kentucky Affiliate,
7/94 - 6/95.

INVITED PRESENTATIONS:

1. Ehringer, W.D., Baker, C.D. and Forsyth W. Evaluation of Endangered Fragile Heelsplitter Mussels (*Potamilus ohiensis*) Using Species/Time Visual Census Methods: Blue River, Southern Indiana, Ohio River Drainage, U.S.A. Indiana Academy of Sciences Annual Meeting, Terre Haute, IN. 1987. (Proc. Indiana Acad. Sci. 97, 1987).
2. Ehringer, W.D., Belcher, D., Wassall, S.R. and Stillwell, W. The Effect of α -Linolenic Acid and γ -Linolenic Acid on Phosphatidylcholine Bilayers. Indiana Academy of Science Annual Meeting, New Albany, Indiana, November, 1989. (Proc. Indiana Acad. Sci. 99, 1990).
3. Ehringer, W.D., Fatty Acyl Chain Composition, Ordering and Fluidity in Plasma Lipoproteins from Rabbits Fed Fish Oils. Sigma XI Annual Research Competition, Indiana University Medical School, March 1990.
4. Ehringer, W.D., Wassall, S.R. and Stillwell, W. The Effect of α -Tocopherol on Phospholipid Vesicles. Indiana Academy of Science Annual Meeting, North Manchester, Indiana, November, 1990. (Proc. Indiana Acad. Sci. 100, 1991).

5. Ehringer, W.D., Wassall, S.R., Jenski, L.J. and Stillwell, W. Docosahexaenoic Acid Increased Permeability of Lipid Vesicles and Tumor Cells. Indiana Academy of Sciences Annual Meeting, Evansville, IN November 8, 1991.
6. Ehringer, W.D., Jenski, L.J., Dumaual, A.C. and Stillwell, W. Docosahexaenoic Acid Increases Fusion and Permeability in Artificial Bilayers and Tumor Cells. Sigma Xi Graduate Student Research Competition, Indianapolis, IN, March 18, 1992.
7. Ehringer, W.D., Dumaual, A.C., Wassall, S.R. and Stillwell, W. Cholesterol Condensation of 18:0, α -18:3 PC and 18:0, γ -18:3 PC Membranes. Indiana Academy of Sciences Annual Fall Meeting, Muncie, IN, November 5-6, 1992.
8. Ehringer, W.D., VanMeter, A., Jenski, L. and Stillwell, W. Can Omega-3 Fatty Acids Reverse the deleterious Effects of Aging in Mitochondria? Indiana Academy of Sciences Annual Fall Meeting, Muncie, IN, November 5-6, 1992.
9. Ehringer, W.D. The Physiology of Inflammation. Biology Department, Indiana University-Purdue University at Indianapolis, Indianapolis, IN, March 29, 1996
10. Ehringer, W.D. Mechanisms of Endothelial Intercellular Permeability. Biochemistry Department, University of Louisville, School of Medicine, Louisville, KY, May 15, 1996.
11. Ehringer, W.D. Mechanisms of Endothelial Intercellular Permeability. Department of Ophthalmology, University of Louisville, School of Medicine, Louisville, KY, October 1, 1997.
12. Ehringer, W.D. Assessing Endothelial Apoptosis by Measuring Endothelial Macromolecular Permeability. LXR Biotechnology Inc., Richmond, CA, April 22, 1998
13. Ehringer, W.D. The Role of Intracellular Calcium, F-Actin, and the Plasma Membrane in Regulating Endothelial Macromolecular Permeability. Department of Physiology and Biophysics, University of Louisville, Louisville, KY May 11, 1999.
14. Ehringer, W.D. In Vitro Measurements of the Effects of Cyclosporin A on the Endothelium. Jewish Hospital, Louisville, KY, May 13, 1999.
15. Ehringer, W.D. Mechanisms That Regulate Endothelial Macromolecular Permeability. James Graham Brown Cancer Center, University of Louisville, Louisville, KY March 13, 2000.
16. Ehringer, W.D. The Effects of Thrombin and Bradykinin on Endothelial Macromolecular Permeability. Department of Pharmacology, Rush University, Chicago, IL October 20, 2000.
17. Ehringer, W.D. The Cell Biology of Inflammation and Transplantation. Department of Biology, Indiana University Southeast, New Albany, IN, March 20, 2001.
18. Ehringer, W.D. The Effects of Fructose-1,6-diphosphate on Cardiomyocyte Function. Department of Surgery, University of Florida, Tallahassee, FL, October 29, 2001

19. Ehringer, W.D. Development of a Direct Cellular Energy Delivery System. Association of Chairs of Department of Physiology, Santa Fe, NM, December 7, 2002.
20. Ehringer, W.D. Development of a Direct Cellular Energy Delivery System. University of California, Davis, Davis, CA, September 6, 2003.
21. Ehringer, W.D. Accelerated Wound Healing Using a Newly Developed ATP Delivery System. Natural Products Alliance, Lexington, KY October 2003.
22. Ehringer, W.D. Development of a Direct ATP Delivery System. Avanti Polar Lipids., August 2003.
23. Ehringer, W.D. Development of a Direct ATP Delivery System. Greater Louisville, Inc., September 2003.
24. Ehringer, W.D. Rose, B.G., Thomas, C.M., Essick, E.E., Keith, R., Wolfe, D., and Chien, S. A Direct Cellular Adenosine Triphosphate (ATP) Delivery System To Combat Ischemia and Hypoxia. Biophysical Society, Baltimore, MD, 2004.
25. Ehringer, W.D. Rose, B.G., Thomas, C.M., Essick, E.E., Keith, R., Wolfe, D., and Chien, S. A Direct Cellular Adenosine Triphosphate (ATP) Delivery System To Combat Ischemia and Hypoxia. First International Conference on Natural Products presented in Cape Town January 12-14, 2005.

PEER-REVIEWED MANUSCRIPTS:

1. Wassall, S.R., Yang, R.C., Wang, L., Phelps, T.M., Ehringer, W.D. and Stillwell, W. 1990. Magnetic Resonance Studies of the Structural Role of Vitamin E in Phospholipid Model Membranes. *Bulletin of Magnetic Resonance*, 12:60-64.
2. Ehringer, W.D., Belcher, D., Wassall, S.R. and Stillwell, W. 1990. A Comparison of the Effects of Linolenic Acid and Docosahexaenoic Acid on Phospholipid Bilayers. *Chemistry and Physics of Lipids*, 54:79-88.
3. Stillwell, W., Ehringer, W.D., Wassall, S.R. 1990. Interaction of α -Tocopherol with Fatty Acids in Membranes and Ethanol. *Biochimica et Biophysica Acta*, 1105:237-244.
4. Ehringer, W.D., Belcher, D., Wassall, S.R. and Stillwell, W. 1991. The Effect of α -Linolenic Acid and γ -Linolenic Acid on Phosphatidylcholine Bilayers. *Chemistry and Physics of Lipids*, 57:87-96.
5. Jenski, L.J., Sturdevant, L.K., Ehringer, W.D., and Stillwell, W. 1991. w-3 Fatty Acids Increase Spontaneous Release of Cytosolic Components from Tumor Cells. *Lipids*, 26:353-358.
6. Wassall, S.R., Wang, L., McCabe-Yang, R.C., Ehringer, W.D., and Stillwell, W. 1991. Electron Spin Resonance Study of the Interaction of α -Tocopherol with Phospholipid Model Membranes, *Chemistry and Physics of Lipids*, 60:29-37.
7. Wassall, S.R., McCabe-Yang, R.C., Ehringer, W.D., and Stillwell, W. 1991. Effects of Dietary Fish Oil on Plasma High Density Lipoprotein: Electron Spin Resonance and Fluorescence Polarization Studies of Lipid Ordering and Dynamics, *Journal of Biological Chemistry*, 267:8168-8174.
8. Jenski, L.J. and Ehringer, W.D., 1991. Effect of Dietary Fish Oil on the Activation and Proliferation of Lymphocytes from Young and Old Mice, *Journal of Nutritional Immunology*, 1(4): 69-82.
9. Jenski, L.J., Sturdevant, L.K., Ehringer, W.D., and Stillwell, W. 1992. Omega-3 Fatty Acid Modification of Membrane Structure and Function: I. Dietary Manipulation of Tumor Cell Susceptibility to Cell and Complement-Mediated Lysis. *Nutrition and Cancer*, 19(2):135-146.
10. Pascale, W., Ehringer, W.D., Stillwell, W., Studevant, L.K. and Jenski, L.J. 1992. Omega-3 Fatty Acid Modification of Membrane Structure and Function: II. Alteration by Docosahexaenoic Acid of Tumor Cell Sensitivity to Immune Cytolysis. *Nutrition and Cancer*, 19(2): 147-158.
11. Stillwell, W., Wassall, S.R., Dumaual, A.C., Ehringer, W.D., Browning, C.W. and Jenski, L.J. 1992. Use of Merocyanine (MC540) in Quantifying Lipid Domains and Packing in Phospholipid Vesicles and Tumor Cells. *Biochimica et Biophysica Acta*, 1146:136-144.

12. Stillwell, W., Ehringer, W.D., and Jenski, L.J. 1993. Docosahexaenoic Acid Increases Permeability of Lipid Vesicles and Tumor Cells. *Lipids*, 28(2): 103-108.
13. McCabe, M.A., Griffith, G.L., Ehringer, W.D., Stillwell, W., and Wassall, S.R. 1994. ^2H NMR Studies of Isomeric Omega-3 and Omega-6 Polyunsaturated Phospholipid Membranes. *Biochemistry*, 33:7203-7210.
14. Stillwell, W., Ehringer, W.D., Dumaual, A.C., and Wassall, S.R. 1994. Cholesterol Condensation of alpha-Linolenic and gamma-Linolenic Acid-Containing Phosphatidylcholine monolayers and bilayers. *Biochimica et Biophysica Acta*, 1214:131-136.
15. Van Meter, A.R., Ehringer, W.D., Stillwell, W., Blumenthal, E.J., and Jenski, L.J. 1994. Aged Lymphocyte Proliferation Following Incorporation and Retention of Dietary Omega-3 Fatty Acids. *Mechanisms of Ageing and Development*, 75:95-114.
16. Jenski, L.J., Bowker, G.M., Johnson, M.A., Ehringer, W.D., Fetterhoff, T., and Stillwell, W. 1995. Docosahexaenoic Acid-Induced Alteration of Thy-1 and CD8 Expression on Murine Splenocytes. *Biochimica et Biophysica Acta*, 1236:39-50.
17. Ehringer, W.D., Edwards, M.J., and Miller, F.N. 1996. Mechanisms of α -Thrombin, Histamine, and Bradykinin Induced Endothelial Permeability. *Journal of Cell Physiology*, 167: 562-569.
18. Zhao, B., Ehringer, W.D., Dierichs, R., and Miller, F.N. 1997. Oxidized LDL Increases Endothelial Intracellular Calcium and Alters Cytoskeletal F-Actin Distribution. *European Journal of Clinical Investigation*, 27: 48-54.
19. Ehringer, W.D., Edwards, M.J., Robert D. Gray, and Miller, F.N. 1997. Bradykinin Antagonizes The Effects Of α -Thrombin. *Inflammation*, 21(3): 279-298.
20. Stillwell, W., Jenski, L.J., Crump, C.T., and Ehringer, W.D. 1997. Effect Of Docosahexaenoic Acid On Mouse Mitochondrial Membrane Properties. *Lipids*, 32, 497-506.
21. Yamany, S.M., Khiani, K., Ehringer, W.D., Miller, F.N., and Farag, A.A. 1997. Application of Neural Networks And Genetic Algorithms In The Classification of Endothelial Cells. *Journal of Pattern Recognition Letters*, 18(11-13): 1205-1210.
22. Ehringer, W.D., Edwards, M.J., Wintergerst, K.A., Cox, A., and Miller, F.N. 1998. An Increase In Endothelial Intracellular Calcium And F-actin Precedes The Extravasation Of Interleukin-2 Activated Lymphocytes. *Microcirculation*, 5: 71-80.
23. Ehringer, W.D., Yamany, S., Steier, K., Farag, A., Roisen, F.J., Dozier, A., Miller, F.N. 1999. Quantitative Image Analysis Of F-actin In Endothelial Cells. *Microcirculation*, 6: 291-303.
24. Niu, W., Zhang, F., Ehringer, W.D., Tseng, M., Gray, L., and Chien, S. 1999. Enhancement For Hypothermic Heart Preservation With Fructose-1,6-diphosphate. *Journal of Surgical Research*, 85(1): 120-129.
25. Ehringer, W.D., and Miller, F.N. 1999. A New Continuous Monitoring System For Simultaneous Measurements Of Intracellular Calcium And Either Endothelial Permeability Or Leukocyte Extravasation. *Inflammation Research*, 48: 393-398.

26. *Ehringer, W.D., Wang, O., Haq, A., and Miller, F.N. 1999. Bradykinin And Thrombin Increase Human Umbilical Vein Endothelial Macromolecular Permeability By Different Mechanisms. *Inflammation*, 24: 175-193.
27. Ehringer, W.D., Niu, W., Chang, B., Wang, O., Gordon, L., and Chien, S. 2000. Membrane Permeability Of Fructose-1,6-diphosphate In Lipid Vesicles And Endothelial Cells. *Molecular and Cellular Biochemistry*, 210:35-45.
28. Thakkar, R.R., Wang, O., Zerouga, M., Stillwell, W., Haq, A., Kissling, R., Pierce, W.M. Smith, N.B., Miller, F.N., and Ehringer, W.D. 2000. Docosahexaenoic Acid Reverses Cyclosporin A-induced Changes In Membrane Structure And Function. *Biochimica et Biophysica Acta*, 1474: 183-195.
29. Chien, S., Zhang, F., Niu, W., Ehringer, W.D., Chiang, B., Shi, X., and Gray, L.A. 2000. Fructose-1,6-diphosphate And a Glucose-free Solution Enhances Functional Recovery In Hypothermic Heart Preservation. *J. Heart Lung Transplantation*, 19: 277-285.
30. Ehringer, W.D., Chiang, B., and Chien, S. 2001. The Uptake and Metabolism of Fructose-1,6-diphosphate in Rat Cardiomyocytes. *Molecular and Cellular Biochemistry*, 221:33-40.
31. Ehringer, W.D., Chiang, B., Su, S., Stillwell, W., and Chien, S. 2002. Destabilizing Effects of Fructose-1,6-diphosphate On Membrane Bilayers. *Lipids*, 37: 885-892.
32. Calamita, H.G., Ehringer, W.D., and R.J. Doyle. 2002. Evidence That The Cell Wall Of *Bacillus subtilis* Is Protonated During Respiration. *Proceedings of the National Academy of Sciences U.S.A.*, 98:15260-15263.

PATENTS:

U.S. Patent (pending): Fusogenic Lipid Vesicles
U.S. Patent (pending): A Membrane Soluble ATP Derivative
U.S. Patent (pending): Increasing Cellular Permeability to ATP
U.S. Patent (pending): Plasma Membrane Translocation of ATP
U.S. Patent (pending): Accelerating Wound Closure Using Topical ATP
U.S. Patent (pending): Stabilization of Fusogenic Lipid Vesicles
Patent Cooperation Treaty (pending): Fusogenic Lipid Vesicles
Patent Cooperation Treaty (pending): Accelerating Wound Closure Using Topical ATP
Patent Cooperation Treaty (pending): Stabilization of Fusogenic Lipid Vesicles

BOOK CHAPTERS:

1. Jenkins, L.J., Sturdevant, L.K., Ehringer, W.D., Pascale, W. and Stillwell, W. 1991. Fish-Oil Rich Diets Increase Tumor Cell Sensitivity to Cell-Mediated Lysis and Alter Tumor Cell Antigen Expression. In Nutrition and Immunology, R.K. Chandra, Editor pp. 297-307, ARTS Biomedical, St. John's, Newfoundland, Canada.

2. Reynolds, D.N., Keeling, K.L., Molestina, R., Srisatjaluk, R., Ehringer, W.D., Justus, D.E., and Kotwal, G.J. 1999. Heparin Binding Activity Of Vaccinia Virus Complement Control Protein Confers Additional Properties Of Uptake By Mast Cells And Attachment To Endothelial Cells. In Advances in Animal Virology. S. Jameel and L. Villarreal eds., pp. 337-343, Science Publishers, Plymouth, UK.

MANUSCRIPTS SUBMITTED OR IN PRESS:

Ehringer, W.D., Chiang, B., Maldonado, C., Thomas, C., Essick, C., Cerrito, P., Arteel, G., Anderson, G., Stillwell, W., and Chien, S. "ATP Delivery via Fusogenic Lipid Vesicles", *Proceedings of the National Academy of Sciences*

ABSTRACTS:

1. Ehringer, W.D., Baker, C.D. and Forsyth, W. 1987. Evaluation of Endangered Fragile Heelsplitter Mussels (*Potamitus ohiensis*) Using Species/Time Visual Census Methods: Blue River, Southern Indiana, Ohio River Drainage, U.S.A. Indiana Academy of Sciences Annual Meeting, Terre Haute IN. 1987. (Proc. Indiana Acad. Sci. 97 1987).
2. Stillwell, W., Belcher, D., Ehringer, W.D., and Wassall, S.R. Comparison of Linolenic (18:3 W3) and Docosahexanoic (22:6 W3) Acids in Phospholipid Bilayers. 33rd Annual Meeting of Biophysical Society, Cincinnati, Ohio, February, 1989. (Biophysical Journal 55:103a, 1989).
3. Wassall, S.R., Phelps, T.M., Wang, L., Yang, R.C., Ehringer, W.D., and Stillwell, W. Spectroscopic Studies of The Effects On Molecular Order and Dynamics In Phospholipid Model Membranes of The Interaction of Vitamin E With Fatty Acid Acyl Chains. 33rd Annual Meeting of The Biophysical Society, Cincinnati, Ohio, February, 1989. (Biophysical Journal 55:249a, 1989).
4. Wassall, S.R., Yang, R.C., Wang, L., Phelps, T.M., Ehringer, W.D., and Stillwell, W. Magnetic Resonance Studies of The Structural Role of Vitamin E in Phospholipid Membranes. 10th Meeting of The International Society of Magnetic Resonance, Colloquium of The Division of Biology and Medicine, Mozine, France, July 1989.
5. Ehringer, W.D., Belcher, D., Wassall, S.R. and Stillwell, W. The Effect of α -Linolenic Acid and γ -Linolenic Acid on Phosphatidylcholine Bilayers. Indiana Academy of Science Annual Meeting, New Albany, Indiana, November, 1989. (Proc. Indiana Acad. Sci. 99, 1990).
6. Yang-McCabe, R.C., Ehringer, W.D., and Wassall, S.R. Effects of w-3 Polyunsaturated Fatty Acids on Plasma Lipoproteins. Indiana Academy of Science Annual Meeting, New Albany, Indiana, November, 1989. (Proc. Indiana Acad. Sci. 99, 1990).

7. Wassall, S.R., McCabe, M.A., Ehringer, W.D., and Stillwell, W. ^2H NMR Studies of a Structural Role For Vitamin E in Membranes. 34th Annual Meeting of The Biophysical Society, Baltimore, MD, February, 1990.(Biophysical Journal 57:473a, 1990).
8. Yang-McCabe, R.C., Ehringer, W.D., Stillwell, W. and Wassall, S.R. Fatty Acyl Chain Composition, Ordering and Fluidity In Plasma Lipoproteins From Rabbits Fed Fish Oils. 34th Annual Meeting of The Biophysical Society, Baltimore, MD, February, 1990.(Biophysical Journal 57:255a, 1990).
9. Stillwell, W., Ehringer, W.D., Wang, L. and Wassall, S.R. Effect of α -Tocopherol on Phospholipid Bilayer Stability. 34th Annual Meeting of the Biophysical Society, Baltimore, MD, February, 1990.(Biophysical Journal 57:271a, 1990).
10. Ehringer, W.D., Wassall, S.R. and Stillwell, W. Effect of α -Linolenic Acid and γ -Linolenic Acid on Phosphatidylcholine Bilayers. 34th Annual Meeting of the Biophysical Society, Baltimore, MD, February, 1990.(Biophysical Journal 57:171a, 1990).
11. Jenski, L.J., Sturdevant, L.K., Ehringer, W.D., and Stillwell, W. Incorporation of Omega-3 Polyunsaturated Fatty Acids into Tumor Cells is Associated with Increased Spontaneous Release of Intracellular Components. FASEB Summer Research Conferences, Copper Mt., Colorado, July, 1990.
12. Wassall, S.R., McCabe, M.A., Ehringer, W.D., and Stillwell, W. Deuterium NMR Studies of Vitamin E Complexation with Unsaturated Fatty Acyl Chains: Mechanism of Membrane Stabilization? 10th International Biophysical Congress, Vancouver, BC, July, 1990. (10th International Biophysics Congress, 269, 1990).
13. Wassall, S.R., McCabe, M.A., Ehringer, W.D., and Stillwell, W. A Structural Role for Vitamin E within Membranes: ^2H NMR Studies. XIV International Conference on Magnetic Resonance in Biological Systems. University of Warwick, Coventry, U.K., September, 1990.
14. Pascale, W., Sturdevant, K., Ehringer, W.D., Stillwell, W. and Jenski, L. Effects of Lipid Vesicle Modification of Tumor Cells. Indiana Academy of Science Annual Meeting, North Manchester, Indiana, November, 1990. (Proc. Indiana Acad. Sci.100, 1991).
15. Ehringer, W.D., Wassall, S.R. and Stillwell, W. The Effect of α -Tocopherol on Phospholipid Vesicles. Indiana Academy of Science Annual Meeting, North Manchester, Indiana, November, 1990.(Proc. Indiana Acad. Sci.100, 1991).
16. McCabe, R.Y., Ehringer, W.D., Stillwell, W., and Wassall, S.R. Effects of w-3 Polyunsaturated Fatty Acids on Plasma Lipoproteins. 1st Annual Symposium For Undergraduates In Science, Engineering and Mathematics, Argonne National Lab, Argonne, Illinois, November, 1990.

17. Wassall, S.R., McCabe, M.A., Ehringer, W.D., and Stillwell, W. ^2H NMR Studies of the Interaction of Alpha-Tocopherol with a Polyunsaturated Phospholipid in a Model Membrane. 35th Annual Meeting of The Biophysical Society, San Francisco, California, February, 1991.
18. Ehringer, W.D., Wassall, S.R. and Stillwell, W. The Effect of α -Tocopherol on Phospholipid Bilayers. 35th Annual Meeting of The Biophysical Society, San Francisco, California, February, 1991.
19. Jenski, L.J. and Ehringer, W.D. Lymphocyte Activation in Young and Old Mice Fed Fat-Modified Diets. Indiana Academy of Science Annual Meeting, North Manchester, Indiana, November, 1990. (Proc. Indiana Acad. Sci. 100, 1991).
20. Jenski, L.J. and Ehringer, W.D. Effect of Dietary Fish Oil on Lymphocyte Activation in Young and Old Mice. 1990 Autumn Immunology Conference, University of Iowa, February 1991.
21. Ehringer, W.D. Fatty Acyl Chain Composition, Ordering and Fluidity in Plasma Lipoproteins from Rabbits Fed Fish Oils. Sigma XI Annual Research Competition, Indiana University Medical School, March 1990.
22. Wassall, S.R., McCabe, M.A., Ehringer, W.D., and Stillwell, W. ^2H NMR of Polyunsaturated Membranes. 10th International Meeting on NMR Spectroscopy of Royal Society of Chemistry, University of St. Andrews, Scotland, July 8-12, 1991.
23. McCabe, M.A., Wassall, S.R., Ehringer, W.D., and Stillwell, W. ^2H NMR of Polyunsaturated Phospholipid Membranes. ACS Joint Meeting of the Central Great Lakes Regional Meeting, Indianapolis, IN, May 29, 1991.
24. Wilson, K.J., Burke, D., Ehringer, W.D., and Stillwell, W. Lipid Composition and ATPase Activity in Plasma Membrane Fractions Isolated from Tissue Culture Cells of Carrot. Plant Physiology Meeting, Albuquerque, NM, July, 1991.
25. Jenski, L.J., Studevant, L.K. and Ehringer, W.D. Fish Oil Rich Diets Increase Tumor Cell Sensitivity to Cell-Mediated Lysis and Alter Tumor Cell Antigen Expression. Nutritional and Immunology Conference, Nova Scotia, July 14-18, 1991.
26. McCabe, M.A., Griffith, G.L., Wassall, S.R., Ehringer, W.D., and Stillwell, W. Broadline ^2H NMR of Polyunsaturated Phospholipid Membranes. 23rd S.E. Magnetic Resonance Conference, Georgia State University, Atlanta, GA October 3-5, 1991.
27. Ehringer, W.D., Wassall, S.R., Jenski, L.J. and Stillwell, W. Docosahexaenoic Acid Increases Permeability of Lipid Vesicles and Tumor Cells. Indiana Academy of Sciences Annual Meeting, Evansville, IN Nov. 8, 1991.
28. Stillwell, W., Wassall, S.R., Browning, C.W., Ehringer, W.D., Dumaual, A.C., Jenski, L.J. Use of Merocyanine (MC540) in Quantifying the Extent of Liquid Crystalline and Gel States in

Lipid Vesicles. ASBMB/Biophysical Society National Meeting, Houston, TX, February 9-13, 1992.

29. Ehringer, W.D., Wassall, S.R. and Stillwell, W. Use of Merocyanine (MCS40) in Quantifying Phospholipid Packing in Lipid Vesicles. ASBMB/Biophysical Society National Meeting, Houston, TX, February 9-13, 1992.
30. Wassall, S.R., McCabe, M.A., Griffith, G.L., Ehringer, W.D., and Stillwell, W. ^2H NMR Studies of w-3 and w-6 Polyunsaturated Phospholipid Membranes. ASBMB/Biophysical Society National Meeting, Houston, TX, February, 9-13, 1992.
31. Little, R.A., Pascale, W., Ehringer, W.D., Stillwell, W., Srivastava, A. and Jenski, L.J. Potential use of Omega-3 Fatty Acids in Gene Therapy and Immunotherapy. Autumn Immunology Conference, Chicago, IL, November, 23-25, 1991.
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33. McCabe, M.A., Griffith, G.L., Ehringer, W.D., Stillwell, W. and Wassall, S.R. ^2H NMR Studies of Polyunsaturated Phospholipid Membranes. American Physics Society March Meeting, March 16-20, 1992.
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35. Ehringer, W.D., Jenski, L.J., A.C. Dumanzi and Stillwell, W. Docosahexaenoic Acid Increase Fusion and Permeability in Artificial Bilayers and Tumor Cells. Sigma Xi Graduate Student Research Competition, Indianapolis, IN, March 18, 1992.
36. Wassall, S.R., Ayala-Somayajula, S., Griffith, G.L., McCabe, M.A., Ehringer, W.D., and Stillwell, W. ^2H NMR Studies of Membrane Stabilization by Vitamin E. XIth Meeting of International Society for Magnetic Resonance, Vancouver, British Columbia, Canada, July 19-24, 1992.
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39. Ehringer, W.D., VanMeter, A., Jenski, L. and Stillwell, W. Can Omega-3 Fatty acids Reverse the Deleterious Effects of Aging in Mitochondria? Indiana Academy of Sciences Annual Fall Meeting, Muncie, IN, November 5-6, 1992.
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41. Hancock, S.L., Ehringer, W.D., Jenski, L.J. and Stillwell, W. Synergistic Interactions of Doxorubicin and Docosahexaenoic Acid on T27A Tumor Cells. Indiana Academy of Sciences Annual Fall Meeting, Muncie, IN, November 5-6, 1992.
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47. Stillwell, W., Wassall, S.R., Dumaual, A.C. and Ehringer, W.D. Use of Dansyl-Lysine and MC540 to Monitor Cholesterol-induced Condensation of Phospholipid Membranes. Annual Meeting of the Biophysical Society, Washington, D.C., February 14-18, 1993.
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Double Bond Location. Annual Meeting of the Biophysical Society, New Orleans, LA, February 27-March 5, 1994.

50. Stillwell, W., Ehringer, W.D., Crump, T., Jenski, L.J. Effect of Long Chain Omega-3 Fatty Acids on Mitochondrial Bioenergetics. Annual Meeting of the Biophysical Society, New Orleans, LA, February 27-March 5, 1994.
51. Ehringer, W.D., Wassall, S.R., and Stillwell, W. Cholesterol Condensation of α -Linolenic Acid and γ -Linolenic Acid-Containing Phosphatidylcholine Monolayers and Bilayers. Annual Meeting of the Biophysical Society, New Orleans, LA, February 27-March 5, 1994.
52. Ehringer, W.D., Edwards, M.J., and Miller, F.N. Alterations in Endothelial Permeability, Calcium Mobilization and Cytoskeletal F-actin in Response to α -Thrombin, Bradykinin, and Histamine. Annual Meeting of the Biophysical Society, San Francisco, CA, February 12-16, 1995.
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54. Ehringer, W.D., Edwards, M.J., and Miller, F.N. The Effect of α -Thrombin, Histamine and Bradykinin on Endothelial Permeability: Relationship to Calcium Mobilization and Cytoskeletal F-Actin. University of Louisville School of Medicine, Health Science Center Research Forum. April 25, 1995.
55. Ehringer, W.D., Edwards, M.J., and Miller, F.N. Mechanisms of α -Thrombin, Histamine, and Bradykinin Induced Endothelial Permeability. Annual Meeting of the Biophysical Society, Baltimore, MD. February 18-21, 1996.
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59. Khiani, K.J., Ehringer, W.D., and Farag, A.A. Quantification of the Distribution of F-Actin in Endothelial Cells Under Treatment of Drugs, TR-CVIP 96-1, Department of Electrical Engineering, University of Louisville, Louisville, Kentucky, June, 1996.
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Agonists. Proceedings from the IEEE Engineering in Medicine and Biology Society (EMBS) Conference, Amsterdam, Oct. 1996.

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64. Haq, A., Ehringer, W.D., and Forsyth, T. The Effects of α -Thrombin and Bradykinin on Endothelial Permeability. Indiana Academy of Science, Saint Joseph's College, Rensselaer, IN October 30-31, 1997.
65. Ehringer, W.D., Edwards, M.J., Wintergerst, K.A., Cox, A., and Miller, F.N. An Increase in Endothelial Intracellular Calcium and F-actin Precedes the Extravasation of Interleukin-2 Activated Lymphocytes. Biophysical Society 42nd Annual Meeting, Kansas City, MO, February 22-26, 1998.
66. Zhang, F., Niu, W., Ehringer, W., Wittebort, R., Gray, L., Shi, X., and Chien, S. Using Fructose-1,6-diphosphate To Enhance Heart Preservation. American College of Cardiology, 48th Annual Meeting, March 30-April 1, 1998.
67. Ehringer, W.D., and Miller, F.N. A New Continuous Monitoring System for Endothelial Permeability, Intracellular Calcium And Leukocyte Extravasation. The Microcirculatory Society Annual Meeting, San Francisco, CA, April 17-19, 1998.
68. Thakkar, R., Wang, O., Haq, A., Kissling, R., Miller, F., and Ehringer, W.D.. Docosahexaenoic Acid Decreases The Effects Of Cyclosporine A On Membrane Permeability. Gill Heart Institute Cardiovascular Research Day, Lexington, KY, October 30, 1998.
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71. Thakkar, R., Wang, O., Haq, A., Kissling, R., Miller, F., and Ehringer, W. Docosahexaenoic Acid Decreases The Effects Of Cyclosporine A On Membrane Permeability. Biophysical Society 43rd Annual Meeting, Baltimore, MD, February 13-17, 1999.
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73. Chiang, B., Chien, S., Wang, O., and Ehringer, W.D. The Permeability Of Fructose-1,6-diphosphate In Cardiomyocytes Is Increased By Hypoxia. Experimental Biology, San Diego, CA April 15-18, 2000.
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76. Ehringer, W.D., Chiang, B., and Chien S. Externally Applied Fructose-1,6-diphosphate Enhances Glycolysis And Reduces The Effects Of Ischemia On The Rat Heart. Research! Louisville, Louisville, KY, November 2, 2000.
77. Ehringer, W.D., Chiang, B., and Chien, S. The Membrane Destabilizing Effects Of Fructose-1,6-diphosphate On Lipid Vesicle And Cells. Biophysical Society 45th Annual Meeting, Boston, MA, February 17-21, 2001.
78. Calamita, H.G., Doyle, R.J., and Ehringer, W.D. Regulation of autolysins in *bacillus subtilis*. International Conference, Romania. 2001
79. Brey, D.M., Yang, X., Roussel, T.J., Keynton, R.S., Alexander, J.S., and Ehringer, W.D. Effects of wall shear stress on the expression of occludin in human umbilical vein endothelial cells. International Mechanical Engineering Congress and Exposition, New York, New York, November 11-17, 2001.
80. Chiang, B., Ehringer, W.D., Su, H., Hua, D., Ye, J., Zhuang, X., Tang, Y., and Chien, S. Protective effect of fructose-1,6-diphosphate (FDP) on cardiomyocytes. American Heart Association National Meeting, Anaheim, California, November 2001.
81. Ehringer, W.D., Chiang, B., Su, S., Stillwell, W., and Chien, S. The membrane destabilizing effects of fructose-1,6-diphosphate. 46th Annual Meeting of the Biophysical Society, February 23-27, 2002.

82. Chiang, B., Ehringer, W.D., Su, S. and Chien, S. A new ATP delivery system for cultured cells under hypoxia. American Heart Association, Second Asia Pacific Scientific Forum, June 8, 2003.
83. Ehringer, W.D. Thomas, C. Essick, B. Grossi, F., Abadia-Perez, G., Maldonado, C., and Chien, S. Accelerated Wound Healing Using a Newly Developed Adenosine Triphosphate (ATP) Delivery System. Biophysical Society, San Antonio, TX February 2003.
84. Ehringer, W.D. Thomas, C. Essick, E. Grossi, F., Abadia-Perez, G., Maldonado, C., and Chien, S. Accelerated Wound Healing Using a Newly Developed Adenosine Triphosphate (ATP) Delivery System. Research! Louisville October 2003.
85. Ehringer, W.D. Accelerated Wound Healing Using a Newly Developed ATP Delivery System. Natural Products Alliance, Lexington, KY October 2003.
86. Ehringer, W.D. Development of a Direct ATP Delivery System. Avanti Polar Lipids., August 2003.
87. Ehringer, W.D. Development of a Direct ATP Delivery System. Greater Louisville, Inc., September 2003.
88. Ehringer, W.D. Development of a Direct Cellular Energy Delivery System. University of California, Davis, Davis, CA, September , 2003.
89. Chiang, B., Ehringer, W. Su, S., Li, M., Hauck, M. and Chien, S. The Protective Effect of ATP Encapsulated Fusogenic Lipid Vesicles on Cardiomyocytes Against Hypoxia. AHA Scientific Session, 2004.
90. Ehringer, W.D. Rose, B.G., Thomas, C.M., Essick, E.E., Keith, R., Wolfe, D., and Chien, S. A Direct Cellular Adenosine Triphosphate (ATP) Delivery System To Combat Ischemia and Hypoxia. Research! Louisville, 2004.
91. Russell, G. Chiang, B. Lambert, J., Bergheim, L., Ehringer, W., and Arteel, G. Protection of Hepatocytes From Chemical Hypoxia Using a Lipid Vesicle ATP Delivery System. Research! Louisville 2004.
92. Ehringer, W.D. Rose, B.G., Thomas, C.M., Essick, E.E., Keith, R., Wolfe, D., and Chien, S. A Direct Cellular Adenosine Triphosphate (ATP) Delivery System To Combat Ischemia and Hypoxia. Biophysical Society, Baltimore, MD, 2004.
93. Keith, R. Grossi, F., Chiang, B., Su, S., and Ehringer, W. Direct Delivery of ATP to Skeletal Muscle to Combat Ischemia, FASEB, Washington, DC, April 2004.
94. Wolfe, D. and Ehringer, W. Hemodynamic Effects of Exogenous ATP Delivery. Research! Louisville, 2004.

95. Ehringer, W.D. Rose, B.G., Thomas, C.M., Essick, E.E., Keith, R., Wolfe, D., and Chien, S. A Direct Cellular Adenosine Triphosphate (ATP) Delivery System To Combat Ischemia and Hypoxia. First International Conference on Natural Products presented in Cape Town January 12-14, 2005.
96. Rose, B., Streips, U. Miller, R., and Ehringer, W. *Bacillus subtilis*: Accelerated Growth Using a Newly-Developed Energy Delivery System. Research! Louisville, 2004.
97. Rose, B., Streips, U. Miller, R., and Ehringer, W. *Bacillus subtilis*: Accelerated Growth Using a Newly-Developed Energy Delivery System. First International Conference on Natural Products presented in Cape Town January 12-14, 2005.
98. Chiang, B., Su, S. Li, M., Ehringer, W., and Chien, S. Direct Intracellular ATP Delivery for Treatment of Cyanide Intoxication. Association for Academic Surgery, 2004.
99. Ehringer, W.D. Rose, B.G., Thomas, C.M., Essick, E.E., Keith, R., Wolfe, D., and Chien, S. A Direct Cellular Adenosine Triphosphate (ATP) Delivery System To Combat Ischemia and Hypoxia. Biophysical Society, Long Beach, California, February 12-16.

GRANTS (Principal Investigator only):

1. American Heart Association-KY Affiliate
"Cytokine-Induced Calcium Mobilization and Barrier Dysfunction in Vascular Endothelial Cells."
Principal Investigator (Fellowship)
Status: Funded and complete
\$17,000 for 7/94-6/95
2. University of Louisville, School of Medicine Research Committee
"Cytokine-Induced Intracellular Calcium Mobilization and Barrier Dysfunction in Vascular Endothelial Cells."
Co-Principal Investigator with Michael J. Edwards, M.D.
Status: Funded and complete
\$8,750.00 for 7/1/94-7/1/95
3. American Heart Association- Kentucky Affiliate*
"Cytokine and Lymphocyte-Induced Alterations in Endothelial Cell Monolayers."
Principal Investigator (Fellowship)
Status: Funded and complete
\$21,482.00 for 7/1/95-6/30/96
4. Cecil E. and Mamie M. Bales Medical Research Fund,
University of Louisville, School of Medicine
"Mechanisms of Lymphocyte Extravasation"

*Selected by the Louisville Institute for Heart and Lung Disease for co-sponsorship.

Principal Investigator
Status: Funded and complete
\$9,981 for 11/96-12/96

5. Office of the University Provost, Center for Faculty Development
University of Louisville
"Professional Development Mini-Grant"
Principal Investigator
Status: Funded and complete
\$750 for 12/96-11/97.

6. American Heart Association-KY Affiliate
"The Regulatory Role of the Endothelium in Lymphocyte Extravasation"
Principal Investigator
Status: Funded and complete
\$21,895 for 7/97-6/98

7. American Heart Association-KY Affiliate
"Metabolic Enhancement For Hypothermic Heart Preservation"
Co-Principal Investigator with Sufan Chien, M.D.
Status: Funded and complete
\$59,771 for 7/98-6/2000

8. Cecil E. and Mamie M. Bales Medical Research Fund,
University of Louisville, School of Medicine
"The Role Of The Extracellular Matrix In Endothelial Permeability"
Principal Investigator
Status: Funded and complete
\$14,002 for 9/98-8/99

9. American Heart Association-Ohio Valley Affiliate
"The Role Of The Extracellular Matrix In Endothelial Permeability"
Principal Investigator
Status: Funded and complete
\$69,279 for three years, 7/99-6/2002

10. NIH, R01
"Enhanced Glycolysis For Hypothermic Heart Preservation"
Co-Principal Investigator with Sufan Chien, M.D.
Status: Funded and active
\$1,468,161 for four years, 9/00-8/05

11. Cecil E. and Mamie M. Bales Medical Research Fund,
University of Louisville, School of Medicine
"Characterizing the Inhibitory Effects of Bradykinin on Thrombin's Role in Inflammation and Blood Coagulation"
Principal Investigator
Status: Funded and complete
\$15,000 for current year of grant, 9/00-9/01

13. Kentucky EPSCoR Phase 0
"The Use of Fusogenic Lipids to Deliver High Energy Phosphates To Ischemic Tissues"
Principal Investigator
Status: Funded and complete
\$4000 for 1 year, 9/02-8/03
14. Vogt Innovation Award
"A New Energy Delivery Vehicle To Combat Ischemia"
Principal Investigator
Status: Funded and complete
\$100,000 for current year of grant, 1/03-12/03
15. KSTC R&D Voucher Fund, The Innovation Group
"A New Energy Delivery Vehicle To Combat Ischemia"
Principal Investigator
Status: Funded and complete
\$200,000 for current year of grant, 1/03-12/03
16. KSEF R&D Excellence Award
"A New Energy Delivery Vehicle To Combat Ischemia"
Principal Investigator
Status: Funded and complete
\$14,850 for current year of grant, 1/03-12/03
17. NIH, SBIR Phase I
"A New Energy Delivery Vehicle To Combat Ischemia"
Principal Investigator
Status: Funded and complete
\$100,000 for current year of grant, 5/03-4/04
18. Natural Products Alliance
"Accelerated Wound Healing Using a Newly Developed ATP Delivery System"
Principal Investigator
Status: Funded and complete
\$48,798 for the period of 6/04-7/05
20. NIH SBIR Phase I
"Partial-Thickness Wound Healing via Topical ATP Delivery"
Principal Investigator
Status: Funded and active
\$134,820 for 4/05-3/06
21. Department of Defense, DARPA, Defense Science Office, Phase I
"Restorative Tissue Repair Using an ATP Delivery System"
Principal Investigator
Status: Pending
\$985,000 for 4/05-3/07

22. NIH SBIR Phase II
"Development of a Direct Cellular Energy Delivery System"
Principal Investigator
Status: Funded and active
\$2,053,032 for 2/05-1/07

23. NIH SBIR Phase I
"A New ATP Delivery System for Liver Transplantation"
Principal Investigator
Status: Funded
\$137,000 for 7/05-6/06

F. ENTREPRENEURIAL ACTIVITIES:

Companies:

VitaTech, LLC, 1044 East Chestnut Street, Louisville, KY, William D. Ehringer, Ph.D., Founder and CSO

Novera, LLC, 1044 East Chestnut Street, Louisville, KY, William D. Ehringer, Ph.D., Founder and CSO

Agreements and Contracts:

Service Agreement, University of Louisville and Novera, LLC, 2003

Service Center, University of Louisville, 2003

License Agreement, University of Louisville Research Foundation, 2002

Option Agreement, University of Louisville Research Foundation, 2002

Manufacturing Agreement, Avanti Polar Lipids, 2004

G. TRAINEES

Candice Thomas, Ph.D. Student, 1/03-present
David Wolfe, Ph.D. Student, 1/03-5/04
Eric Essick, Ph.D. Student, 1/03-present
Rachel Keith, M.S. Student, 1/03-present
Gregory Feitelson, Ph.D. student, 1/04-present
Benjamin Chiang, M.D., Post-Doctoral Research Associate, 1/99-present

Wenying Niu, M.D., Post-Doctoral Research Associate, 8/98-1/99
Rupin Thakkar, Undergraduate Student, Grinnell College, 5/98-8/99
Kelly Steir, Graduate Student, Speed School of Science, 9/96-10/97
Adeel Haq, Undergraduate Student, Indiana University Southeast, 8/96-8/97
Roger Kissling, Undergraduate Student, University of Louisville, 5/97-9/97
Kupper A. Wintergerst, Undergraduate Student, Bellarmine, 9/95-5/96
Kamel Khiami, Graduate Student, Speed School of Science, 6/95-9/96
Sean M. Ladson, Undergraduate Student, University of Louisville, 6/96-8/96

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